

GEL'FOND, S.

Make progressive practices available to each brigade. Mor.flot
23 no.240 F '63. (MIRA 16:2)

(Odessa---Longshoremen)

GEL'FOND, S.

What is the advantage of unloading raw sugar transported in bulk?
Mor. flot 23 no.11:15-16 N '63. (MIRA 16:12)

1. Otvetstvennyy sekretar' gazety "Odesskiy portovnik".

GEL'FOND, S.S.

Experience in the repair of SE-3 excavators. Ogneupory 22
no.6:283-288 '57. (MIRA 10:7)
(Excavating machinery--Maintenance and repair)

GELFREYKH, G.B.

KRISTOFOVICH, A.N. [deceased]; L'VOV, V.Ye.; MARKOV, A.V., professor;
KOROLEV, A.V.; GOLOSNIYSKIY, L.P.; OGORODNIKOV, K.F., professor;
BYGNSON, M.S., professor; LOZIN-LOZINSKIY, L.K., professor;
VOROB'YEV, A.G., professor; KOZLOVA, K.I.; KAZENNOV, B.A.; SUSLOV,
A.K.; GELFREYKH, G.B.; VASIL'YEV, O.B.; LICHKOV, B.L., professor;
SYROMYATNIKOV; KUTYREVA, A.P.; KATTERFEL'D, G.N.; SYTINSKAYA, M.N.;
SHARONOV, V.V.; SUVOROV, N.I.; KUCHEROV, N.I.; TIKHOV, G.A.;
GORSHKOV, P.M.

Addresses by A.N.Kristofovich and others. Trudy Sekt.astrobot.AN
Kazakh.SSR 4:68-157 '55. (MLRA 9:12)

(Mars (Planet))

GELFRYKH, S. F.

GELFREICH, G., KOROLKOV, D., RISHKOV, N. and SOBOLEVA, N.

"On the Regions over Sunspots as Studied by Polarization Observations on Centimeter Wavelengths."

paper presented at Symposium on Radio Astronomy, Paris, 30 - Jul - 6 Aug 58.

07123

S/058/61/000/002/014/018
A001/A001

3.1720(1041,1126,1127)

Translation from: Referativnyy zhurnal, Fizika, 1961, No. 2, p. 404, # 22h508

AUTHORS: Korol'kov, D.V., Soboleva, N.S., Gel'freykh, O.B.

TITLE: A Study of Local Zones of Solar Radio Emission by Polarization Observations at Centimeter Wavelengths

PERIODICAL: "Izv. Gl. astron. observ. v Pulkove", 1960, Vol. 21, No. 5, pp. 81 - 113 (Engl. summary)

TEXT: The authors describe methods of analyzing polarized radiation and principles of operation of several particular types of polarization receivers which have been employed in observations of solar sources at centimeter wavelengths at the Pulkovo Observatory since 1956. Difficulties are considered which are encountered during investigations of polarization nature; they are due to the presence of a large background of non-polarized radiation from the whole Sun. The observations were carried out with antennas of low resolving power during solar eclipses and with the Great Pulkovo radiotelescope. It was discovered that regions of enhanced radio emission, whose brightness temperature amounts to

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89123

S/058/61/000/002/014/018
A001/A001

A Study of Local Zones of Solar Radio Emission by Polarization Observations at Centimeter Wavelengths

several million degrees, are associated with sunspot groups. The radiation of these regions is, as a rule, circularly polarized, and polarization degree amounts to several tens per cent. Polarized radiation regions have sharply outlined boundaries, and their dimensions are approximately equal to dimensions of nuclei of the corresponding sunspot groups. Radiation of these regions is comparatively stable, the flux varying usually slightly during the existence of the group. Assuming the thermal mechanism of radiation, it is possible to determine magnetic field, kinetic temperature and density in radiation regions which are located at an altitude of 0.05-0.07 R \odot above the photosphere. Methods of determining these characteristics are described and estimates, made on the basis of observational materials, are presented. There are 29 references.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

87355

9.1800

S/035/60/000/012/013/019
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 12,
p. 49, # 12272

AUTHORS: Gel'freykh, G. B., Korol'kov, D. V.

TITLE: The Application of Small-Base Radio Interferometers to Observations
of the Sun During Eclipses

PERIODICAL: Izv. Gl. astron. observ. v Pulkove, 1960, Vol. 21, No. 5, pp. 179-186
(English summary)

TEXT: The authors discuss the possibility of using radio interferometers with the base of a few hundred wavelengths for observations of solar eclipses on centimeter wavelength. The application of phase-modulated interferometers permits the attenuation of a signal from the "quiet" Sun by 10 times or more in the course of an eclipse and consequently the facilitation of recording the signals from the local sources on the Sun; therefore the precision of determining their dimensions and positions will increase. The amplitude and phase of the signal must be recorded during observations. To facilitate the phase recording, the base of the interferometer can be oriented along the world axis. The calculated curves of the

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A001/A001

The Application of Small-Base Radio Interferometers for Observations of the Sun During Eclipses

eclipse course, under the assumption that the quiet Sun is a disk of uniform brightness, are presented. The problem is also discussed on the effect of the diagram of an interferometer individual mirror on the selection of the optimum base length. The method proposed can also be applied to observations of weak bursts of solar radio emission and for determinations of their location on the disk. There are 5 references. X

Authors' summary

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

S/214/62/000/003/001/004
1046/1246

AUTHOR: Gal'freykh, G.B.

TITLE : Estimates of magnetic field intensity in solar radiobursts in the centimeter range

SOURCE: Solnechnyye dannyye, no. 3, 1962, 50-55

TEXT: Assuming physical independence (incoherence) of the ordinary and the extraordinary waves in plasmas, and very steep gradients of the magnetic field at the boundary of the radiating region, the author derives theoretically the following general relation between the magnetic field H in the radioemission source and the statistical average $\tan \beta$ of the ratio between the axes of the polarization ellipse:

$$\tan \beta = \frac{1}{2} \left[1 + \sqrt{u} \ln \sqrt{u} + \frac{1-u}{\sqrt{u}} \ln (1 + \sqrt{u}) \right] \quad (10)$$

where $u = \frac{H}{H_0} = \frac{eH}{mc}$. The theoretical results for $u = 0.15$ ($H = 500$ gauss) are in excellent agreement with Akabane's experimental data (Ref.6: K. Akabane. Annal Tokyo Astron. Obs., Second Ser., 6, 1, 1958). There are 3 figures.

Card 1/1

h1879

S/214/62/000/005/003/003
I046/I246

3.1.70

AUTHOR: Gel'freikh, G.B.

TITLE: The thermal model of the radiobursts in the centimeter range

SOURCE: Solnechnyye dannyye, no. 5, 67-75, 1964-

TEXT: Intensity and polarization of $\lambda = 2.2$ cm solar radio-bursts are explained satisfactorily by a condensation of coronal matter that expands isotropically and at a constant velocity (~ 2000 km/sec), satisfying the relation $nT^{3/2} = \text{const}$, where n is the electron concentration and T the temperature. Application of theoretical results to prediction of intensity and polarization of $\lambda = 4.9$ cm bursts gave fairly satisfactory estimates (theoretical

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S, 214. 62/000/005/003/003
I046/I246

The thermal model.....

intensity of $\lambda = 4.9$ cm bursts is $1/5$ of the $\lambda = 2.2$ cm intensity, whereas the experimental intensity is $1/10$; theoretical polarization of $\lambda = 4.9$ cm bursts is -0.04% , whereas the experimental polarization is $+9\%$). The discrepancies are smoothed down by allowing for temperature gradients directed into the radiating region. The basic difficulty of the theory, viz., the origin of the very hot and dense coronal condensation ($T \sim 20 \cdot 10^6$ to $1 \cdot 10^6$ °K, $n \sim 4 \cdot 10^{11}$ to $4 \cdot 10^9$ cm $^{-3}$) required to explain the general shape of burst-curves, will probably be removed after magnetic bremsstrahlung has been taken into account. There are 6 figures.

Card 2/2

GEL'FREYKH, G.B.

Theory of polarization modulators. Izv. GAO 23 no.3:203-214 '64.
(MIPA 17:11)

GLI'FREYEN, G.H.

depolarization and the transfer of radio emission in anisotropic
plasma. Izv. GAG 23 no.5:59-71 1964.

(UCLA 17:11)

S/124/60/000/003/004/017
A005/A001

Translations from: Referativnyy zhurnal, Mekhanika, 1960, No. 3, p. 7, # 2882

AUTHOR: Gel'frat, B. Ye.

TITLE: Two Cases of Integrability of the ^VProblem of Two Bodies of Variable Mass and the Application of These Cases to Studying the Motion in a Resistant Medium

PERIODICAL: Byul. In-ta teor. astron. AN SSSR, 1959, Vol. 7, No. 5, pp. 354-362
(English summary)

TEXT: A material point m is considered, which moves in the vicinity of a central body, the mass M of which varies according to the law

$$\frac{dM}{dt} = \alpha_1 M^n.$$

Rigorous solutions of the differential equations of motion of the point m are presented in the two cases when $n = 0$ and $n = 1.5$; the polar coordinates of the point m in relation to the body M are expressed by the first-kind Bessel functions. The author shows that the motion proceeds in both cases with practically constant eccentricity in the orbit osculating in the Armellini-Jeans sense. Therefore, the

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3/124/60/000/003/004/017
A005/A001

Two Cases of Integrability of the Problem of Two Bodies of Variable Mass and
the Application of These Cases to Studying the Motion in a Resistant Medium

conclusion is drawn that both of the cases studied are inapplicable to explaining
the observed correlation between the eccentricities and revolution periods in
binary systems. It is shown in what manner the occurrence of a capture caused
by the variation of mass or a disintegration of the system, either in the past
or in the future (depending on the sign of ω), may be stated from the known
initial conditions. The results obtained are used for studying the motion of
a material point around a body of constant mass within a nongravitating medium,
which exerts resistance proportional to the velocity. It is shown that the
eccentricity is practically constant also in this case. ✓B

M. I. Yerimov

Card 2/2

GFL'FREYKH, S. V.

GFL'FREYKH, S. V.: "The problem of intensifying the operation of calendars in the rubber industry." Moscow, 1955. Min Higher Education USSR. Moscow Inst of Chemical Machine-Building. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis' No. 47, 19 November 1955. Moscow.

STAROV, I.M.; SUSHCHENKO, A.A.; GEL'FREYKH, S.V.

Regularities of changes and calculation of the capacity of a driving electric motor for a rubber mixer at an increased pressure and rotation speed of rotors. Kauch. i rez. 20 no.6:19-22 Je '61.
(MIRA 14:6)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.
(Rubber machinery)

1. GEL'FREYKH, V. G.; MINKUS, M. A., Arch.
2. USSR 600
4. Public Buildings - Moscow
7. 20-story administrative building on Smolensk Square, Gor. khoz. Mosk, 23, No. 7, 1949.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

GEL'FREYKH, Ya. G, arkhitektör; KORABEL'NIKOV, A., arkhitektör; GOLUBOVSKIY,
L., arkhitektör; GIL'MAN, Ya., inzh.

Design of an apartment house with rolled reinforced concrete
components executed by the Institute for the Design and Planning
of Housing and Civil Construction in the City of Moscow. Zhil.
stroil. no.4/5:38-42 '58. (MIRA 12:6)

(Apartment houses)
(Architecture--Designs and plans)

ZHDANOVICH, G.A.; GEL'GAR, L.L.

New technological equipment of the wineries for the first-stage
treatment of grapes. Trudy VNIIViV "Magarach" 9:33-52 '60.
(MIRA 13:11)

(Wine and wine making—Equipment and supplies)

SELEZNEV, V.; GEL'GAR, O.

Equipment for a wheel-changing unit. Avt.transp. 41 no.11:23-25
N '63. (MIRA 16:12)

1. Krymskiy oblastnoy avtomobil'nyy trost.

VCROPAYEVA, S.D.; GEL'GOR, V.I.; GERMANOV, A.B.

Increase in sensitivity to penicillin in resistant bacteria.
Antibiotiki 6 no.12:1120-1123 D '61. (MIRA 15:2)

1. Kafedra mikrobiologii (zav. - prof. M.N.Lebedeva) I Moskovskogo
ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.
(PENICILLIN)

VOROPAYEVA, S.D.; GEL'GOR, V.I.; LUNACHARSKAYA, T.V.

Mechanism of the development of staphylococcal drug resistance.
Antibiotiki 8 no.5:456-460 My'63 (MIRA 17:3)

1. Kafedra mikrobiologii (zav. -- prof. M.N. Lobedeva) i Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.

USSR / Cultivated Plants. Fodder Grasses and Edible
Roots.

M

Abs Jour : Ref Zhur - Biologiya, No 6, 1959, No. 24922

Author : Geliashvili, P. A.
Inst : Georgian Zoological Engineering Veterinary
Institute

Title : Effect of Fertilizers on the Yield Increase
of Fodder Edible Roots and Fodder Melon
Cultures Under Irrigation Conditions of the
Gardabanskiy Rayon of the GrSSR

Orig Pub : V. sb.: Materialy 13-y Nauchn. konferentsii
(Gruz. zootekhn. vet. in-t), Ch. 2, Tbilisi,
1957, 61-21

Abstract : In experiments of 1953-1954, the introduction
of granulated fertilizers under fodder squash
and fodder beet of N₆₀P₁₃₂K₈₆ increased the

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Card 2/2

AUTHOR: Gel'g, A.Kh.

SOV/20-123-4-3/53

TITLE: On the Stability of the Solutions of the Cauchy and the Mixed Problem for Hyperbolic Equations (Ob ustoychivosti resheniy zadachi Koshi i smeshannoy zadachi dlya giperbolicheskikh uravneniy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 4, pp 591-594 (USSR)

ABSTRACT: The author considers the Cauchy and the mixed problem for the equations

$$u_{tt} = a_{ij} u_{x_i x_j} + 2a_{i0} u_{x_i t} + a_i u_{x_i} + (a_0 - \alpha) u_t + (a - \beta) u + f$$

$$\alpha^0(t, x) u_t - \alpha^s(t, x) u_{x_s} + \mathcal{L}(t, x) u + F(t, x)$$

and similar ones. He investigates the stability of the solutions, where the stability is understood so that the norm of the solution for all $t > 0$ remains smaller than ε . Under very numerous, partly very unintelligible assumptions the author formulates seven theorems and one lemma. In some parts the results improve the well-known results of Ladyzhenskaya. There are 2 Soviet references.

Card 1/2

On the Stability of the Solutions of the Cauchy and SOV/20-123-4-3/53
the Mixed Problem for Hyperbolic Equations

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut imeni
A. I. Gertsena (Leningrad State Pedagogical Institute imeni
A. I. Gertsen)

PRESENTED: June 2, 1958, by V. I. Smirnov, Academician

SUBMITTED: May 28, 1958

Card 2/2

GELIO, A. Kh.

Stability of Cauchy problem solutions for symmetric systems of partial differential equations. Izv.vys.ucheb.zav.; mat. no.1: 69-83 '60. (MIRA 13:6)

1. Leningradskiy gosudarstvennyy pedagogicheskiy institut imeni A.I.Gertsena.

(Differential equations, Partial)

GELIO, A. Kh.

Stability of solutions of a mixed problem for hyperbolic equation
of the second order. Izv. vys. ucheb. zav.; mat. no. 3:104-112
'60. (MIRA 13:12)

1. Leningradskiy pedagogicheskiy institut imeni A.I. Gertsena.
(Differential equations, Linear)

GELIG, A. Kh. Cand Phys-Math Sci -- "On the stability of ~~the~~ solutions of the Cauchy problem and the mixed problem for equations of the hyperbolic type." Len, 1961 (Len Order of Lenin State Univ im A. A. Zhdanov). (KL, 4-61, 183)

-11-

16.3400
16.8000

S/043/62/007/002/001/007
D407/D301

AUTHOR: Gelig, A.Kh.

TITLE: On using Lyapunov's second method for studying the stability of nonlinear discontinuous systems

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 7, 2, 1962, 58 - 61

TEXT: It is shown that many of the results, obtained in the references for continuous nonlinear functions, can be extended to nonlinearities with first-order discontinuities. Hence it becomes possible to use the stability criteria, established (in the references) for continuous systems. The indirect control-system JA

$$\dot{x} = Ax + a\varphi(\sigma), \quad (1)$$

$$\sigma = (b, x) - p\varphi(\sigma) \quad (1')$$

is considered, where A is a real square matrix, whose eigenvalues have negative real parts; n , a , b are n -dimensional vectors; σ , p , φ are scalars, and (b, x) is a scalar product. The function $\varphi(\sigma)$

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On using Lyapunov's second method ... S/043/62/007/002/001/007
D407/D301

has first-order discontinuities at isolated points $\sigma = \sigma_k$ ($k = 1, 2, \dots$), it is continuous for $\sigma \neq \sigma_k$, and satisfies some additional conditions. The solution to system (1)(1') is constructed as follows: The trajectories of the systems (1) (1') intersect the hyperplane M. The equations for the sliding regime are

$$\begin{aligned} \dot{x} &= Ax + \frac{(b, x)}{\rho} a, \\ \sigma &= \sigma_k. \end{aligned} \quad (3)$$

Through each point of the space $-\infty < \sigma, x_1, \dots, x_n < +\infty$ passes at least one trajectory, determined by the systems (1), (1') and (3). The totality of these systems is denoted by (R). By definition the solution of system (R) is any curve, constructed from the trajectories of systems (1), (1') and (3) in a certain manner (prolongation of trajectories); this solution is piecewise-linear. Theorem: If a Lyapunov function of type

$$V = (Hx, x) + \int_0^{\sigma} \varphi(\sigma') d\sigma' \quad (4)$$

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On using Lyapunov's second method ...

S/043/62/007/002/001/007
D407/D301

(Hx, x) being a positive-definite quadratic form), exists for the systems (1), (1') with any continuous function $\varphi(\sigma)$, $\varphi(\sigma)\sigma > 0$ with $\sigma \neq 0$, $\varphi(0) = 0$, the derivative of V being negative-definite, then the undisturbed motion of the system (R) is stable in the large for any piecewise-linear function $\varphi(\sigma)$ which satisfies certain conditions. The theorem is proved by a method, given in the references. There are 9 Soviet-bloc references. JA

SUBMITTED: May 21, 1961

Card 3/3

GELIG, A.Kh.

Using Liapunov's second method for studying the stability of
motion of nonlinear discontinuous systems. Vest.IGU 17 no.7:58-
61 '62. (MIRA 15:5)

(Functions, Discontinuous)

53211
S/020/62/147/003/003/027
B112/B186

AUTHOR: Gelig, A. Kh.

TITLE: Stability of motion of systems with unambiguous equilibrium position

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 3, 1962, 526 - 528

TEXT: A system

$$\dot{x} = Ax + a\varphi(\sigma); \quad (1)$$

$$\sigma = b^*x \quad (2)$$

is considered. The eigenvalues of the matrix A are assumed to have negative real parts. The scalar function $\varphi(\sigma)$ has to fulfill the following conditions:

$$\varphi(\sigma)\sigma > 0 \text{ for } \sigma \neq 0; \quad (3)$$

$$\varphi(\sigma_k - 0)\varphi(\sigma_k + 0) > 0 \text{ for } \sigma_k \neq 0; \quad (4)$$

$$|\varphi(\sigma)| < \text{const for } -\infty < \sigma < +\infty. \quad (5)$$

The following three theorems are derived: (1) If there is such a number

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Stability of motion of systems...

$\alpha > 0$ that

$$\operatorname{Re}(1 + i\omega)\chi(i\omega) > 0 \quad (11)$$

for $-\infty < \omega < +\infty$, where $\chi(p) = b^*(A - pE)^{-1}a$, and if $\varphi(\sigma)$ is continuous in the point $\sigma = 0$, then the equilibrium position $x = 0$ will be globally stable. (2) If condition (11) is fulfilled, if $\chi(i\omega) \neq 0$ for all real $\omega \neq 0$, if $\varphi(\sigma)$ has a first-order discontinuity in the point $\sigma = 0$, and if $\varphi(0) > 0$, then the equilibrium position $x = 0$ will be globally stable. (3) If condition (11) is fulfilled, if $\chi(i\omega) \neq 0$ for all real $\omega \neq 0$, if $\varphi(\sigma)$ has a first-order discontinuity in the point $\sigma = 0$, and if there is such a number $\varepsilon_0 > 0$ that

$$\varphi(\sigma) > \varphi(+0) \text{ for } 0 < \sigma \leq \varepsilon_0, \quad (12)$$

$$\varphi(\sigma) < \varphi(-0) \text{ for } -\varepsilon_0 \leq \sigma < 0;$$

and if $\chi(0) = 0$, then the steady set

$$x = -A^{-1}a\xi, \quad \xi \in [\varphi(-0), \varphi(+0)] \quad (10)$$

will be globally stable.

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Stability of motion of systems...

S/020/62/147/003/003/027
B112/B186

PRESENTED: June 7, 1962, by V. I. Smirnov, Academician

SUBMITTED: May 27, 1962

Card 3/3

KHEIFE S, M.Z., kand.tekhn.nauk; GELIG, A.Kh., kand.fiz.-mat. nauk

the form of nonsensitivity of a control system. Energomashinoostroenie
10 no.1:25-26 Ja '64. (MIRA 17:4)

ACCESSION NR: AP4024676

S/0103/64/025/002/0153/0160

AUTHOR: Gelig, A. Kh. (Leningrad)

TITLE: Investigating the stability of nonlinear discontinuous automatic-control systems having nonunique equilibrium state

SOURCE: Avtomatika i telemekhanika, v. 25, no. 2, 1964, 153-160

TOPIC TAGS: automatic control, discontinuous automatic control, nonlinear automatic control, automatic control with several equilibriums, piecewise continuous nonlinearity

ABSTRACT: Systems having one piecewise-continuous nonlinearity and several equilibrium positions, the spectrum of the system's linear part lying in the left semiplane, are considered. This class of systems is considered:

$\dot{x} = Ax + a\varphi(\sigma)$, $\sigma = (b, x)$, where A is an n -dimensional quadratic real matrix whose all eigenvalues have negative real components; a and b are constant

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ACCESSION NR: AP4024676

columns. Function $\varphi(\sigma)$ is piecewise-continuous (each finite segment having a finite number of the first-kind discontinuities), has a discontinuity at $\sigma = 0$ and satisfies $\varphi(\sigma) \cdot \sigma \geq 0$. By using A. M. Lyapunov's second method, sufficient conditions of stability in the large are obtained for the sets of equilibrium states; the conditions are similar to V. M. Popov's frequency criterion (Avtomatika i telemekhanika, v. 24, no. 1, 1963). Orig. art. has: 3 figures and 40 formulas.

ASSOCIATION: none

SUBMITTED: 10Jan63

DATE ACQ: 15Apr64

ENCL: 00

SUB CODE: CG, IE

NO REF SOV: 009

OTHER: 000

Card 2/2

KOMARNITSKAYA, O.I., kand. fiziko-matem. nauk; GELIG, A.Kh., kand. fiziko-matem. nauk

Stability of a control system with insensitivity. Energomashinostroenie
11 no.6:27-28 Je '65. (MIRA 18:7)

L 44736-65 - ENP(x)/ENP(h)/ENP(d)/ENP(v)/ENP(l) Pf-4/Pg-4/Pk-4/Pl-4/
Po-4/Pq-4/Pse-2 IJP(c) BC

ACCESSION NR: AP5008313

S/0103/65/026/003/0401/ 0409

AUTHOR: Gelig, A. Ki. (Leningrad)

TITLE: Absolute stability of nonlinear plant with distributed parameters

SOURCE: Avtomatika i telemekhanika, v. 26, no. 3, 1965, 401-409

TOPIC TAGS: automatic control, automatic control design, automatic control system,
automatic control theory, nonlinear plant

ABSTRACT: The distributed-parameter automatic-control system is theoretically considered which has one nonlinearity in the form of: (a) hysteresis or (b) nonlinearity describable by a single-valued differentiable function. The sufficient frequency conditions of absolute stability are found by a modified V. M. Popov method. These conditions allow for the direction of circuit of the hysteresis loop in the case (a) or for the limitations placed upon the nonlinearity derivative in the case (b). Orig. art. has: 55 formulas.

ASSOCIATION: non

SUBMITTED: Nov 63

ENCL: 00

SUB CODE: DP, IE

ord 1/1

NO REF SOV: 012

OTHER: 00

1 43571-56

ACC NR: AP6023657

SOURCE CODE: UR/0103/66/000/004/0005/0014

15
B

AUTHOR: Gelig, A. Kh. (Leningrad)

ORG: none

14

TITLE: Stability of nonlinear controlled systems with distributed parameters in critical cases

SOURCE: Avtomatika i telemekhanika, no. 4, 1966, 5-14

TOPIC TAGS: hysteresis loop, nonlinear control system, control system stability

ABSTRACT: This is a continuation of a previous work (Absolyutnaya ustoychivost' nelineynykh reguliruyemykh sistem s raspredelemnymi parametrami. Avtomatika i telemekhanika, t. XXVI, No. 3, 1965) in which a noncritical case was analyzed. The present paper deals with a control system consisting of a linear segment with distributed parameters and one nonlinear element of the hysteresis loop type. This system, described by equation

$$\sigma(t) = \sigma_0(t) + \sigma_1(t) - \int_0^t [\gamma(t-\tau) + \gamma_1(t-\tau)] \varphi(\sigma, \tau) d\tau.$$

(where σ_0 describes the natural damped oscillations of the linear part of the system; σ_1 - the sustained natural oscillations; γ - the noncritical pulse transfer function component; γ_1 - the critical component of this function) is analyzed for the following critical cases: 1) the charac-

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UDC: 62-501.32

L 43571-56

ACC NR: AP6023657

teristic equation of the linear segment of the system has a pair of purely imaginary roots ($\pm i$); 2) one zero and a pair of purely imaginary roots ($0, \pm i$); 3) two zero roots ($0, 0$); 4) one zero root (0). Using a modified version of the V. M. Popov method, the necessary stability conditions are derived, which make allowance for the direction in which the hysteresis loop is by-passed. Orig. art. has: 50 formulas.

SUB CODE: 09,12/ SUBM DATE: 20Jan65/ ORIG REF: 007.

Cord 2/2 JS

ACC NR: AP6029542

SOURCE CODE: UA/0105/66/000/000/0005/0014

AUTHORS: Gelig, A. Kh. (Leningrad); Komarnitskaya, O. I. (Leningrad)

ORG: none

TITLE: Absolute stability of nonlinear systems with non-unique equilibrium state in critical cases

SOURCE: Avtomatika i telemekhanika, no. 8, 1966, 5-14

TOPIC TAGS: stability criterion, nonlinear system, ordinary differential equation, matrix function, automatic control system

ABSTRACT: Automatic control systems are analyzed where one of the nonlinearities has a non-unique equilibrium state. The nonlinear system under study is given by

$$\dot{y} = Py + q\varphi(\sigma), \quad \sigma = (y, r)$$

where P is a constant, $n \times n$ matrix, q and r are constant vectors, y is a vector function of time t , and $\varphi(\sigma)$ is a piecewise smooth function in the domain

$$0 \leq \varphi(\sigma)\sigma < \mu_0\sigma^2 \quad (\mu_0 \leq +\infty)$$

In this analysis two cases are considered where the matrix P has characteristic solutions on the imaginary axis. The equilibrium state of the above system is determined from the equations

$$Py + q\varphi(\sigma) = 0, \quad \sigma = (y, r)$$

Card 1/2

UDC: 62-501.714

AP6029542

The two cases for P studied are: $\det P \neq 0$ (no singularities), and $\det P = 0$ (the singular case). For the singular case, three cases are analyzed corresponding to three types of zeros in the characteristic numbers. A set of theorems is proved satisfying a number of conditions on $\varphi(\sigma)$, and sufficient conditions are given for absolute stability in the system. Several examples are considered, the first of which is an oscillator with nonlinear damping, and the second -- the stability of an aircraft with autopilot. Orig. art. has: 46 equations.

SUB CODE: 13, 12/ SUBM DATE: 16 Nov 64/ ORIG REF: 011/ OTH REF: 001

Card 2/2

31

Polyvinyl resins and their use in light industry H. E.
L. Z. K. *Zhukovskiy Prom.* 10, No. 12, 36 (1971) Reviewed
tech. and patent literature. No references H. Z. K.

7

CA

Determination of chlorine in substances of high molecular weight. Weigh 0.1-0.5 g of substance in a dry flask. Add 10 ml of 20% KOH and 10 ml of 20% NaOH and heat to reflux for 1 hour. Cool, dilute to 25 ml with water, add 1 ml of 20% HNO₃, and titrate with 0.1 M K₂Cr₂O₇. Add 10 ml of 20% HNO₃ and titrate with 0.1 M K₂Cr₂O₇.

GELLER, B.E.

PA 190740

USSR/Chemistry - Plastics

Oct 51

"The Molecular Composition of Chlorinated Polychlorovinyls," B. E. Geller

"Zhur Prik Khim" Vol XXIV, No 10, pp 1058-1062

The compn of industrial samples of perchlorated resins is not uniform. Most of the various foreign admixts are found in the low-mol fraction which is not a deriv of polychlorovinyl.

✓
190740

GELLER, B. E.

PA 23674

USSR/Chemistry - Plastics, Synthetic
Fibers Nov 52

"Interaction Between Chlorinated Polyvinyl Com-
pounds and Solvents," B. E. Geller, A. B. Pakshver,
All-Union Inst of Synthetic Fibers

"Zhur Prii Khim" Vol 25, No 11, pp 1196-1200

After studying the interaction between various
polyvinyl compds and organic liquids, a connection
was found between the intensity of intermolecular
interaction and the magnitude of the contraction

23674

of the system. The relationship between the
properties of the system (contraction, viscosity,
coagulation) and the number of hydrogen atoms
capable of forming hydrogen bonds of the type
-Cl→H- was pointed out.

23674

LEVIN, V. G., Engr

Artificial Synthesis of Fibers

Dissertation: "Processes of Formation of Isodacrylonitrile Fiber." Grad Tech Sci, Moscow
Textile Inst, 25 March 1954.
(Vechernyaya Moskva, Moscow, 16 March 1954)

SC: 3 N 213, 20 Sept. 1954

USSR /Chemical Technology. Chemical Products
and Their Application

I-28

Synthetic fibers

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32738

Author : Geller B. E.

Title : The Effect of Molecular Weight and Degree of
Polymerization of the Perchlorovinyl Resin on
the Physico-Mechanical Properties of the Khlurin
Fiber

Orig Pub: Tekstil'n. prom-st', 1956, No 11, 14-16

Abstract: Perchlorovinyl was fractionated and from the
individual fractions, their mixtures and the
initial polymer a fiber (F) was produced by
the wet spinning procedure under standard condi-
tions. Stretching in spinning 120%. It is

Card 1/3

USSR /Chemical Technology, Chemical Products
and Their Application

I-28

Synthetic fibers

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32738

shown that with increase in the degree of polymerization (DP) of the perchlorovinyl the length at break and the number of double foldings of the F increase. With an increase in DP by 3 times (from 420 to 1150) the length at break increases by 1.8 times and the number of double foldings by more than 13 times. Elongation of the F increases with increasing DP up to 850, and decreases somewhat thereafter. Production of F from mixtures of fractions of different molecular weight has shown that F containing 8-10% of low-molecular fractions has satisfactory physico-mechanical properties, while with a higher content the physico-mechanical properties

Card 2/3

2

✓ High-tenacity chloring fiber. H. E. Geller. Tekstil.
From. 16, No. 3, 29-31(1953).—The tenacity of perchloro-
vinyl fiber stretched in hot air is affected by the degree of the
stretching and the temp. The higher is the tenacity of the
original fiber, the higher is the tenacity of the stretched one.
Optimum tenacity is obtained when heating at a temp.
close to that of the viscous flow (95-105°) but not higher.

Elisabeth Barabash

Mattew / M. A YOUTZ
2 copies

DM JH

OELLER, B.Ye., kand.tekhn.nauk.

Using articles made from chlorinated fiber. Khim.prom. no.5:307-308
Jl-Ag '57. (MIRA 10:12)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo
volokna.

(Ethylene) (Textile fibers, Synthetic)
(Filters and filtration)

OLLER, B. E.

On the strength of carbon-chain fibers of the vinyl chloride series,
Zhur. fiz. khim. 31 no.5:1171-1174 My '57. (MIRA 10:11)
(Textile fibers, Synthetic) (Vinyl compounds)

GELLER, Boris ~~Emmanuilovich~~; ORLOVA, L.A., red.; KOGAN, V.V., tekhn.red.

[Chemistry and technology of chlorine fibers] Khimiia i tekhnologiya khlorinovogo volokna. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po legkoi promyshl., 1958. 122 p. (MIRA 11:12)

(Textile fibers, Synthetic)

AUTHORS: Matveyeva, S. P., Geller, B. E.,
Pakhver, A. B.

SOV/-15658-3-39/52

TITLE: The Influence of the Properties of the Polyacrylnitrile Fiber on the Conditions for Dying it (Vliyaniye svoystv poliakrilonitril'nogo volokna na usloviya yego krasheniya)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp. 553 - 555 (USSR)

ABSTRACT: The dying of synthetic fibers depends on the rate of diffusion of the coloring substance in the interior of the fiber. The diffusion coefficient of the coloring substance in the polyacrylonitrile fiber is very small, which makes it difficult to dye. Newly-produced fiber can be dyed well and evenly with acid and basic coloring substance after washing and before complete drying. After the drying process the fibers lose almost completely their absorptive power for the coloring substances. The experiments carried out showed that a satisfactory dying of the polyacrylonitrile fiber is possible only when the fiber is slightly swollen prior to its complete drying. There are 1 figure and 7 references, 5 of which are Soviet.

Card 1/2

. The Influence of the Properties of the Polyacryl-
nitrile Fiber on the Conditions for Dying it

SOV, 156-58-3-39/52

ASSOCIATION:

Kafedra khimicheskoy tekhnologii voloknistykh
materialov Vsesoyuznogo zaochnogo instituta tekstil'noy i legkoy
promyshlennosti (Chair for the Chemical Technology of Fiber
~~materials at the All-Union Institute~~ for the Study by Correspondence
of Textile and Light Industry)

SUBMITTED: February 27, 1958

Card 2/2

5(1, 3)

AUTHORS:

Rybkulova, N. M., Geller, B. E., Pakshver, S. E.

SV/153-58-5-18/28

TITLE:

Investigation of the Mechanism of Darkening and of the Decoloring Methods of Spinning Solutions and of the "Nitron" Fiber (Issledovaniye mekhanizma potemneniya i metodov obeatsvechivaniya pryadil'nykh rastvorov i volokna "nitron")

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 5, pp 107-113 (USSR)

ABSTRACT:

Synthetic chemical fibers should have a uniform color. In the production of polyacrylonitrile fibers, especially of the "Nitron" fiber 15-16% spinning solutions of polyacrylonitrile (PAN) in dimethyl formamide (DMF) can have colors from light yellow to dark brown. This is caused by the stability of the polymer, the quality of the solvent and other factors. The color of the fiber depends on that of the spinning solution. The problem of producing white fibers has been many times discussed in publications (Refs 1-10). The present paper serves the purpose of explaining the causes of the phenomena of colors of concentrated solutions of PAN in DMF, as well as in the ready fiber. Furthermore production methods of white fibers

Card 1/3

S07/153-58-5-18/28

Investigation of the Mechanism of Darkening and of the Decoloring Methods of Spinning Solutions and of the "Nitron" Fiber

were to be devised. PAN, PAN solutions in DMF, films and fibers were investigated. Tables 1 and 2 as well as figures 1-4 give the results obtained. Since spinning solutions as well as freshly formed fibers become yellow or dark on a longer heating to 100° it must be assumed that DMF is saponified in an aqueous medium. Colored amidine compounds are formed by the interaction of the separated dimethyl amine and ammonia with the polymer (CN-groups). This assumption was proved by 3 facts experimentally checked (Figs 3, 4). The causes are admixtures in DMF, as there are H-COOH, NH₃ and (CH₃)₂NH. The substances of basic character present in the spinning solution lead to a darkening, those of acid character brighten the solution. Acids forming compounds with ammonia and amines and which are capable of entering reactions with -CN-groups are an exception. A scheme of the mechanism of this reaction was suggested. Production methods of the white polyacrylonitrile fibers was devised. The authors recommend usage of a) a pure solvent, as well as substances that bind dimethyl amine and ammonia to a non volatile solid compound, and which are incapable of reacting with the

Card 2/3

S07/153-58-5-18/20

Investigation of the Mechanism of Darkening and of the Bleaching Methods
of Spinning Solutions and of the "Nitron" Fiber

-CN-groups of the polymer. They are H_2SO_4 , SO_2 , $H_2C_2O_4$ and others. b) To carry out an acid treatment of the ready fiber with weak acid solutions, and c) to bleach the ready fiber with acid solutions of sodium chlorite. There are 4 figures, 2 tables, and 15 references, 11 of which are Soviet.

ASSOCIATION: Vsesoyuznyy zaochnyy institut tekstil'noy i legkoy promyshlennosti i vsesoyuznyy nauchno-issledovatel'skiy institut iskusstva vennogo volokna (All-Union Correspondence Institute for Textile and Light Industry, and All-Union Scientific Research Institute for Synthetic Fibers)

SUBMITTED: January 11, 1958

Card 3/3

PAKSHVER, E.A.; GELLER, B.E.; VIROGRADOV, G.V.

Studying the concentrated solutions of polyacrylonitrile
in dimethylformamide. Khim. volok. no.2:21-24 '59.

(MIRA 12:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo
volokna.

(Acrylonitrile) (Formamide)

GELLER, B.E.; GORYACHKO, G.V.; DMITRIYEVA, N.A.; LARIONOV, N.I.

Destruction of polyacrylonitrile by the action of an ultrasonic field. Vysokom.sped. 1 no.11:1610-1616 N '59. (MIRA 13:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna i Kalininskiy pedagogicheskiy institut.
(Acrylonitrile) (Ultrasonic waves)

GELLER, B E.

PHASE I BOOK EXPLOITATION

SOV/5177

Pakshver, Aleksandr Bernardovich, and Boris Emmanuilovich Geller
Khimiya i tekhnologiya proizvodstva volokna nitron (Chemistry and
Technology of Nitron [Orlon] Fiber Production) Moscow,
Goskhimizdat, 1960. 147 p. Errata slip inserted. 10,000
copies printed.

Ed.: S. I. Babushkina; Tech. Ed.: V. V. Kogan.

PURPOSE: This book is intended for engineer-technicians of the
chemical fibers industry. It may also be used as a textbook
for students of schools for higher education in chemistry and
textiles.

COVERAGE: The book contains basic information on the production of
acrylic fibers and polymers and copolymers of acrylonitrile.
Methods developed by the Soviet chemical industry for producing
orlon-type fibers are presented. The authors state that Soviet
production of orlon-type polyacrylonitrile fibers will be thirty

Card 1/4

Chemistry and Technology (Cont.)

SOV/5177

thousand tons in 1965. Chapters 1 - 4 and the supplements were written by B. E. Geller; Chapters 5 - 10 are by A. B. Pakshver. The authors thank T. M. Ivanova, A. A. Geller, V. I. Maksimov, and T. M. Kazachkova, personnel of the Branch of VNIIV (All-Union Scientific Research Institute for Fibers). References, mostly English and German, accompany individual chapters.

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Card 2/4	

Chemistry and Technology (Cont.)

SOV/5177

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Chemistry and Technology (Cont.)	SOV/5177
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AVAILABLE: Library of Congress	

Card 4/4

JA/rn/os
5/26/61

GELLER, B. E.

PHASE I BOOK EXPLOITATION

SOV/5644

Vserossiyskaya konferentsiya professorov i prepodavateley pedagogicheskikh institutov

Primeneniye ul' traakustiki k issledovaniyu veshchestva. vyp. 10. (Utilization of Ultrasonics for the Investigation of Materials. no. 10) Moscow, Izd-vo MOPI, 1960. 321 p. 1000 copies printed.

Eds. : V. F. Nozdrev, Professor, and B. B. Kudryavtsev, Professor.

PURPOSE: This book is intended for physicists and engineers interested in ultrasonic engineering.

COVERAGE: The collection of articles reviews present-day research in the application of ultrasound in medicine, chemistry, physics, metallurgy, ceramics, petroleum and mining engineering, defectoscopy, and other fields. No personalities are mentioned. References accompany individual articles.

Card 1/10

Utilization of Ultrasonics (Cont.)

SOV/5644

TABLE OF CONTENTS:

Nozdrev, V. F. Physical Principles of the Engineering and
Technical Use of Low-Amplitude Molecular Acoustics 3

Larionov, N. I., G. V. Goryachko, N. A. Dmitriyeva, and
B. E. Geller [Kalininsk. pedinstitut im. M. I. Kalinina,
Kalininsk. filial VNIIV-Kalinin Pedagogical Institute imeni
M. I. Kalinin, Kalinin Branch of the All-Union Scientific
Research Institute for High Polymers]. Investigation of
Degradation Processes in High Polymers Under the Action
of an Ultrasonic Field 23

Kogan, I. N., L. I. Menes, and N. I. Parlashkevich [N. -i. in-
t plastmass - Scientific Research Institute for Plastics].
Continuous Measurement of Viscosity With the Aid of an
Ultrasonic Viscometer 33

Card 2/10

S/183/60/000/02/13/025
B004/B005

AUTHORS: Beder, N. M., Geller, B. E., Pakshver, A. B.

TITLE: On the Molecular Composition of Polyacrylonitrile

PERIODICAL: Khimicheskiye volokna, 1960, No. 2, pp. 33 - 36

TEXT: In the introduction, the authors give a survey of various methods of polymerizing acrylonitrile (Refs. 1-15), and investigating the polymerization degree (Refs. 16-18). It was the authors' intention to work out an accurate method of estimating the polymerization degree of polyacrylonitrile (PAN). The separation of fractions by their molecular weight was carried out on the PAN dissolved in dimethyl formamide (DMF) by fractionated precipitation. Table 1 indicates the coagulation numbers of various reagents. Turpentine proved to be the most suitable precipitant. The solubility of turpentine in DMF increases sufficiently with rising temperature (Fig. 1) so that a fractionated precipitation becomes possible at 32°. An addition of oxalic acid facilitates the separation of fractions. The authors describe their procedure. The gelatinous precipitate is dissolved once more in DMF, and precipitated with water. 8-12 fractions of PAN were obtained, and their molecular weight was determined by measuring the specific viscosity of their

Card 1/2

On the Molecular Composition of Polyacrylonitrile

8/183/60/000/02/13/025
B004/B005

0.25% solutions in DMF. Fig. 2 shows the results of this analysis. Table 2 indicates molecular weights of PAN obtained with various initiators including samples from Eastern Germany and the Rumanian People's Republic. Fig. 3 shows the division of a polymer into fractions of different viscosity. The PAN produced by continuous procedures showed the maximum homogeneity. There are 3 figures, 2 tables, and 19 references, 4 of which are Soviet. V

ASSOCIATION: Kalininskiy filial VNIIV (Kalinin Branch of the All-Union Scientific Research Institute of Synthetic Fibers)

Card 2/2

158530

26254
S/194/61/000/001/021/038
D216/D304

AUTHORS: Larionov, N.I., Goryachko, G.V., Dmitriyeva, N.A.
and Geller, B.E.

TITLE: Analysis of the high polymer degradation process
under the influence of an ultrasonic field

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika,
no. 1, 1961, 15, abstract 1 E131 (V Sb. Primeneniye
ul'traakust. k issled. veshchestva, no. 10, M.,
1960, 23-32)

TEXT: The results are given of experimental analysis of the process of degradation of polyacrylonitrile (ПАА (PAN)) and of other forms of polymers (e.g. acetvi cellulose АЦ - (ATs) in the solution of dimethylformamide ДМФ (DMF)) under the action of a powerful ultrasonic field as a function of frequency and power for concentrations up to 5 g/l. It is shown that under the action of a field intensity up to 20 W/cm² and frequency 500 Kc/s, the molecules of

Card 1/2

2525-
S/194/61/000/001/021/038
D216/D304

Analysis of the high polymer...

PAN are degraded while those of acetylcellulose remain unchanged. This fact is explained by the strength of chemical bonds within the polymer structure between the polymer molecule and the side-groups. The kinetics of the degradation process of PAN have been studied. It is shown that the depolymerization process follows the 1st order reaction and that long chain molecules are degraded first. The results are shown in the form of graphs. 22 references.

Card 2/2

GELLER, B.E.; MESKIN, I.M.

Numerical expression of the molecular weight distribution of
polymers. Vysokom.sped. 2 no.1:29-34 Ja '60.
(MIRA 13:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo
volokna.

(Polymers) (Molecular weights)

S/190/69/002/010/005/026
B004/B054

AUTHOR: Celler, B. E.

TITLE: Thermochemical Rating of Structural Properties of Polymer Materials

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1466-1469

TEXT: The author studied the thermal processes during the swelling and dissolution of polymer materials, and found that the heat amount released as a function of time was characteristic of the polymer structure. He defined the coefficient G of the heat release (dimension cal/g·min), and investigated the kinetics of the heat release of polyacrylonitrile (PAN) fiber and perchlorovinyl (PVC) fiber which had been subjected to different preliminary treatments. Dimethyl formamide was used as a solvent for PAN, cyclohexanone for PVC. Besides, the author measured the heat development during the dissolution of freshly precipitated PAN and PVC calorimetrically. A figure shows the diagrams obtained. The experimental data are given in the following table: ✓

Card 1/2

Thermochemical Rating of Structural Properties of Polymer Materials

S/190/60/002/010/005/026
B004/B054

Preliminary treatment of polymer

	G, cal/g·min	
	PAN	PVC
freshly precipitated, dried at 20°C	11.05	13.46
freshly precipitated, dried at 40°C	9.64	10.73
freshly precipitated, dried at 60°C	8.25	8.18
fiber after coagulating bath	4.21	12.28
fiber after drawing to 150%	(4.05) ¹⁾	12.96
fiber after drawing to 300%	3.49	-
fiber after drawing to 500%	1.21	-
fiber after drying at 80°C	1.09	11.87

¹⁾ value determined by graphic interpolation.

The author mentions a paper by E. Kal've, and thanks T. M. Kazachkova and N. V. Kapitsa for their assistance. There are 1 figure, 1 table, and 7 Soviet references.

ASSOCIATION: Kalininskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (Kalinin Branch of the All-Union Scientific Research Institute of Synthetic Fibers). Tashkentskiy tekstil'nyy institut (Tashkent Textile Institute)

SUBMITTED: March 7, 1960
Card 2/2

ASH, M.A.; GELLER, B.E.

Thermal relaxation of polyacrylonitrile fiber. Khim.volok. no.1:
(MIRA 14:2)
30-32 '61.

1. Kalininskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta
iskusstvennogo volokna.
(Orlon--Thermal properties)

S/190/61/003/001/004/020
B119/B216

AUTHOR: Geller, B. E.

TITLE: Changes in the density of the molecular packing of polar carbochain polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 1, 1961, 33-36

TEXT: The authors point out that every deformation, and thus also elongation, of macromolecules leads to a change of free energy of the system. Such changes result from the changes of entropy and heat content of the system, whereby the contributions of each of these components to the overall change is variable. Elongation may therefore lead both to an increase or decrease of the density of molecular packing in the polymers. An exact knowledge of the behavior of polar polymers under these conditions is very important for fabricating (fiber shaping). The authors studied the behavior of polyacrylonitrile (PAN) and perchlorovinyl (PCV) fibers (the latter is chlorinated polyvinyl chloride) at elongation and thermorelaxation on the basis of changes of density. The latter was

Card 1/4

Changes in the density of the molecular...

S/190/61/003/001/004/020
B119/B216

determined at 25°C by the flotation method (PAN in a CCl₄-benzene mixture, PCV in aqueous KI solution). The degree of elongation and the temperature at which thermorelaxation was carried out were varied considerably in the tests. Thermorelaxation was performed in hot air and steam, respectively, under pressure. Fig. 1 gives a density versus elongation plot and Fig. 2 a plot of density versus temperature of thermorelaxation. Basing on atomic weights, atomic distances, bond angles, etc., the author calculated the theoretical values for the density of various polymers, including the ones investigated, for the case of complete orientation and compares the theoretical with the experimental values:

	theoretical density	experimental maximum density
polyethylene	0.9898	0.96
polyvinyl chloride	1.7869	1.38
perchlorovinyl (64% Cl)	2.2661	1.41
polyvinylidene chloride	3.6303	1.80
polyacrylonitrile	1.3590	1.20

Card 2/4

Changes in the density of the molecular...

S/190/61/003/001/004/020
B119/B216

The differences between the theoretical and experimentally determined maximum density of PAN and PCV are ascribed to the irregular chemical structure of the polymer chain (which causes an increase in the entropic component of the overall change in free energy). The author thanks M. A. Ash, T. Ya. Grishina, and R. K. Strachkova for preparing the fibers under study and L. G. Kulikova for assisting in the experiments. A work by Yu. S. Lipatov, V. A. Kargin, and G. L. Slonimskiy is mentioned. There are 2 figures, 1 table, and 9 references: 7 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Tashkentskiy tekstil'nyy institut (Tashkent Textile Institute), Kalininskiy filial VNIIV (Kalinin Branch of the VNIIV)

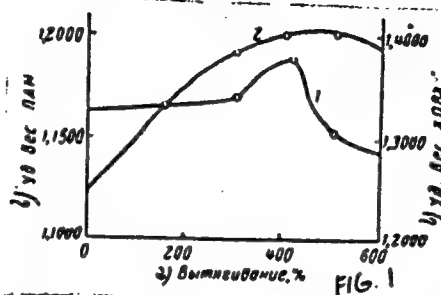
SUBMITTED: May 25, 1960

Card 3/4

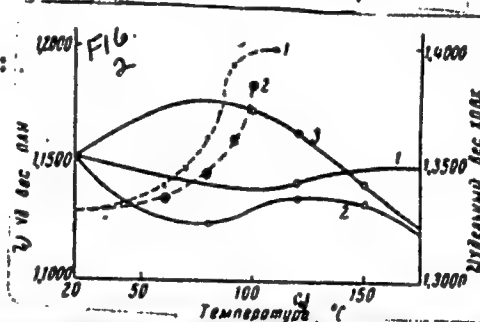
Changes in the density of the molecular...

S/190/61/003/001/004/020
B119/B216

Legend to Fig. 1: a) % elongation,
b) density (lefthand ordinate for PAN,
righthand ordinate for PCV); curve 1:
PAN fiber, curve 2: PCV fiber.



Legend to Fig. 2: a) temperature at
which thermorelaxation was carried out,
b) density (lefthand ordinate for PAN,
righthand ordinate for PCV); solid curve:
PAN fiber; broken curve: PCV fiber.
1: thermorelaxation in the unloaded
state in hot air, 2: the same test
under stress, 3: thermorelaxation in
the unloaded state in steam.



Card 4/4

BARANOV, A.I.; GELLER, B.E.; LARIONOV, N.I.

Studying the properties of concentrated polymer solutions by the
ultrasonic testing method. Prim. ul'traakust. k issl. veshch.
no.14:217-225 '61. (MIRA 14:12)

(Polymers--Testing)
(Ultrasonic waves--Industrial applications)

GELLER, B.E.

Properties of the system dimethylformamide - water. Part 1:
Thermochemical investigation. Zhur. fiz. khim. 35 no.5:1105-
1113 My '61. (MIRA 16:7)

1. Tashkentskiy tekstil'nyy institut.
(Formamide) (Systems(Chemistry))

IVANOVA, T.M.; GELLER, B.E.

Properties of the system dimethylformamide - water. Part 2: Saturated vapor pressure and osmotic pressure of aqueous solutions. Zhur.fiz. khim. 35 no.6:1221-1229 Je '61. (MIRA 14:7)

1. Tashkentskiy tekstil'nyy institut i Kalininskiy filial
Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo
volokna.

(Formamide) (Vapor pressure)

GELLER, B.E. (Tashkent)

Some physicochemical properties of dimethylformamide. Zhur.fiz.-
khim. 35 no.10:2210-2216 0 '61. (MIRA 14:11)
(Formamide)

CELLER, B.E.

Thermochemical properties of the system ethylene carbonate -
water. Izv.vys.ucheb.zav.;khim.i khim.tekh. 5 no.3:391-393
'62. (MIRA 15:7)

1. Tashkentskiy tekstil'nyy institut, kafedra khimicheskoy
tekhnologii vysokomolekulyarnykh soyedineniy.
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AUTHOR: Geller, B. E.

TITLE: On the flexibility of macromolecules and the mobility of molecular associates

CITED SOURCE: Sb. nauchno-issled. rabot Khimiya i khim. tekhnol. vysokomolekul. sovedineniy. Tashkentsk. tekstil'n. in-t, no. 1(17), 1964, 189-195

TOPIC TAGS: macromolecule, polyvinylchloride / chlorinated polyvinylchloride, polyacrylonitrile

TRANSLATION: The change of the conformation characteristics of macromolecules of a polyvinylchloride, chlorinated polyvinylchloride, and polyacrylonitrile in dilute solutions in different solvents was followed. The "skeletal" flexibility of macromolecules (in a θ -solvent) and the "equilibrium" flexibility in other solvents were evaluated according to the Florey method. The "skeletal" flexibility decreases in a series: polyethylene > polyvinylchloride > chlorinated polyvinylchloride > polyacrylonitrile. The "equilibrium" flexibility of macromolecules depends essentially

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